

How to co-create collective awareness on the benefits of trees

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Nature is our ally in solving all kinds of social problems. This was well understood by the researchers of the ongoing URBiNAT (2018-2023) project, with focus on the regeneration of under-served urban neighbourhoods¹, through the co-creation of Nature-Based Solutions. Combining physical and infrastructural – green - solutions with social and economic practices, this project aims at creating collective awareness and contribute to a better understanding of human and non-human dimensions of our urban environments by conducting research, exploring case studies and implementation in several cities. How can these results and working methods also apply to trees and better conservation of the tree stock², which also play a key role in many challenges society is facing? Trees are essential in tackling climate change through mitigation and adaptation. They are natural and free air conditioners, they purify the air, provide carbon storage and biodiversity in the soil/underground and they fulfil a landscape or social role in villages and cities. Moreover, they provide a green counterweight to the increasing use of space in Flanders³, something that could be experienced first-hand during the corona crisis. Yet trees still often disappear to make room for other space claims in Flanders. Today, citizens and permit providers (mainly municipalities) make an important mark on the above-ground use of space: recent research by the Department of Environment & Spatial Development Flanders shows that most applications for tree felling are submitted by citizens, and that municipal authorities approve nearly every application. In this new research proposal, integrating the approach of the URBiNAT project in order to prevent the disappearing tree stock in Flanders, we want to know why trees are cut down and how we can co-create collective awareness on the benefits of trees with the stakeholders involved in Flanders.

Keywords: trees, ecosystem services, co-creation, awareness

1. INTRODUCTION AND PURPOSE OF THIS STUDY

In this research proposal, we consider whether the URBiNAT method can be used to increase collective awareness for tree preservation and for biodiversity conservation, given the benefits of trees and biodiversity (ecosystem services). After all, a previous study on tree felling and planting and vegetation changes of trees outside the forest in Flanders (Peeters et al, 2022) shows that trees still have to make room for other space claims.

The research of Peeters et al (2022) was carried out in connection with trees outside the forest because there are few reliable and area-wide figures available on the evolution of the number of trees outside the forest. In addition, the felling of trees outside the forest context is regulated by different regulations than for trees in the forest. In the first instance, the felling of trees outside the forest is regulated by the Decree on nature conservation and the natural environment of 21.10.1997 and the rules on spatial planning from the Flemish Spatial Planning Codex. For trees within the forest, this is regulated by the Forest Decree of 13 June 1990.

In section 2.1 we first explain the results of this previous research on tree felling and planting and vegetation changes (Peeters et al, 2022) and the recommendations we will focus on. In section 2.2. we explain the URBiNAT project, NBS (Nature-Based Solutions) and the SROI tool (Social Return on Investment). In section 2.3, we screen the potentially relevant information from a completed research on the felling and planting of trees, that can be combined with the URBiNAT method. To what extent can this method help to increase support for the preservation of trees?

The goal of this study is to explore the application of the URBiNAT method to increase support for tree preservation and biodiversity conservation. But this research proposal is also innovative, because it proposes a new research method, with a new tool (the SROI tool), which is still being developed. This research could help to further optimise the SROI tool.

¹among other suburbs

²Since the generic SROI instrument of URBiNAT has so far evaluated the socio-economic-spatial impact of a Nature-Based Solution (focused on public spaces), where trees also play a role.

³ Flanders is the northern region of Belgium and is also the most dense and urbanized part of it.

2.1. Tree felling: a screening of the permit system

There are many initiatives to expand the tree stock. Both local and supralocal authorities recognise the importance and value of trees, and in their policy documents, they emphasise the many benefits and functions of trees in the living environment and in rural areas. The Flemish Coalition Agreement 2019-2024 contains several goals for the tree area in Flanders. The most specific goal is planting 1 million additional trees in the Flemish Periphery around Brussels. At the beginning of 2020, Flemish Minister of The Interior Bart Somers proposed the Local Energy and Climate Pact, which included the ambition to plant 3,300 km of hedges and 6.6 million trees – or 1 tree for each inhabitant of Flanders – in cooperation with local authorities by 2030. Flemish Minister for the Environment Zuhal Demir endorses the importance of these goals and the many benefits and functions of trees in the living environment and in the countryside, first in the 'Vlaams Bosuitbreidingsplan' [the Forest Expansion Plan Flanders] (2020) and later in the 'Vlaams Klimaatadaptatieplan' [the Flemish Climate Adaptation Plan] (Vlaams Overheid, 2022). The intention is to stimulate the planting of tall trees by means of a Flemish regulation or another instrument in the (re)construction of well-known urban heat islands such as car parks and squares, as well as the introduction of trees in climate-adaptive agriculture. But also on local level, many municipalities have expressed commitments for the expansion of their tree area. This is reflected in the signing of the Covenant of Mayors⁴, an European project, or 'het bomencharter' [the Tree Charter]⁵ (a citizens' initiative). Parties signing the Tree Charter commit to planting 1.7 million additional trees by 2024 (Peeters et al. 2022).

If we aim at a net growth the tree stock in Flanders, we have to plant new trees, but also preserve the existing tree stock. In order to investigate this, the Flemish Department of Environment & Spatial Planning carried out a first research in order to gain insights into the felling and planting of trees outside the forest, in order to support policy (Peeters et al, 2022). The research consisted of a quantitative and qualitative analysis of data derived from the Flemish permit systems. The input of permit providers was also requested. Additionally, this report also describes the impact of other dynamics that influence the felling and/or preservation of trees. A number of methods have been explored for mapping the felling of trees without a permit requirement.

For trees in gardens, an application for a felling permit is usually filed. 75% of the applications are submitted by private individuals, and more than half are located in residential areas (according to regional land use plans). Compared to the Flemish average (8 applications/km²), the number of applications in gardens (24/km²) and residential areas (34/km²) is significantly higher, with outliers in residential parks⁶, where even ten times more tree fellings are requested.

According to the above-mentioned research, these figures indicate that 'nuisance' caused by trees around homes is one of the most common reasons why trees have to disappear. Examples of nuisance are leaves and fruits falling of trees, or the loss of light and vision.

Since gardens make up more than 12%⁷ of Flanders and 9 out of 10 applications for tree felling are approved, it is understandable that private individuals are an important stakeholder in the preservation of the tree stock. Therefore, we want to investigate what the real reason is why these trees are cut down, and later we want to examine how we can sensitize these stakeholders (to arrive at a mindset that understands and appreciates the importance of trees).

According to this study, what are the reasons for cutting down trees in relation to trees outside the forest? The competent municipal authorities estimate that the most common causes (average score on a scale of 1 to 5) are: buildings (3.7), nuisance (3.3), pavement (3.2), safety (3.1), making way for other functions (2.5) and gardens (2.4). The estimate of the number of trees that will be destroyed for buildings, pavement and other functions is admittedly (too) high compared to the share of permit applications within a larger project and therefore seems to be an overestimation.

Nuisance can take many different forms, but from the complaints that municipalities receive about trees, this appears to be mainly about leaf fall and fruits. Shadow casting on solar panels is mentioned as an emerging complaint. Other current reasons for felling are illness or loss of vitality in coniferous trees (due to damage by the type setter), safety nuisance around railways (often after complaints from the Belgian Railroad Company), and (fear of) storm damage.

An important observation from the discussions with municipal officials is that many municipalities indicate that the reasons for cutting down trees that are described in permit applications certainly do not always correspond to the real reason for the felling.

⁴ The Covenant of Mayors is a European initiative, bringing together thousands of local authorities that voluntarily commit to achieving EU climate and energy targets: [Burgemeestersconvenant | Vlaanderen.be](https://burgemeestersconvenant.vlaanderen.be), retrieved 27 July 2023.

⁵ Through the Tree Charter, cities and municipalities commit themselves to obtain a certain number of additional trees (the target) on the territory of the city/municipality: bomencharter.be, retrieved 27 July 2023.

⁶ In Flanders, a residential park is intended as a residential area, intended for living in greenery. This specific type of zoning area accommodates many trees, on average more than in other residential areas.

⁷ calculations based on the [GARMON](https://garmon.be)-project, retrieved on 26 July 2023

There are also a number of specific cases⁸ where trees are cut down without a permit being required. These are difficult to quantify due to a lack of data. In order of estimated importance, these are: tree fellings around roads and pipes by the road and pipeline managers, felling of trees on the public domain (mainly redevelopment of streets and public space) and fellings of trees that pose an acute danger (e.g. after storm damage).

In order to draw up a policy to reduce the felling of trees, it is important to know why trees are cut down. Research into this can be done both by delving deeper into the reasons described in the application files, and by going through more files (submitted applications) than possible within the time frame of the previous research about trees mentioned before (Peeters et al, 2022). Research that examines the imposed conditions by delving deeper into the files can also be an added value. The other way is to question the applicants (and other actors) for tree felling (sociological research). URBiNAT is a possible way to conduct this research. That is why we will in the next section first briefly describe what this project and this method exactly entails.

Other ways to reduce the tree fellings according to the study are: stricter regulations, fewer felling permits and good communication ('what is the use of trees?'). Good communication may be important for sensitisation, but the two other possibilities are beyond the scope of this study, and we will not discuss it here.



Gert Arijns 2019

2.2. The URBiNAT method in a nutshell

URBiNAT (2018-2023) is an innovative European project that focuses on co-creation in urban environments. The project, funded by the European Union's Horizon 2020 programme, aims to transform the concept of urban development through the active involvement of citizens, stakeholders and various interest groups. The main goal of URBiNAT is to promote sustainable and inclusive cities in which people are central. The project focuses on developing and implementing new approaches to urban planning and design, with co-creation at its core. This means that all parties involved, including residents, businesses, municipal authorities and academics, work together to find solutions to urban challenges and create liveable and resilient cities. URBiNAT has three Front runner cities based on their innovative use of public space through Nature-Based Solutions (NBS): Nantes, Sofia and Porto⁹.

⁸ Trees of less than one metre trunk circumference and trees within a radius of 15 metres around a licensed building may be freely cut down. This also applies to trees that are included in a management plan, and under certain conditions also to trees that pose an 'acute danger', trees on public land, trees in the context of agroforestry, trees that are cut down by railway managers and pipeline managers, etc

⁹ The aim of these cases is to regenerate the public space in urban districts by means of project interventions or initiatives that focus on (i) the public space within these districts/areas and on (ii) the co-realization of so-called innovative nature-based solutions (NBS). [Urbinat - Healthy corridors as drivers of social housing neighbourhoods for the co-creation of social, environmental and marketable NBS.](#), retrieved on 27 July 2023.

The URBiNAT project defines Nature-Based Solution (NBS) in view of the Healthy Corridor (HC) concept¹⁰. The HC is situated on a macro-scale (i.e. certain urban districts/areas) consisting of various NBS positioned on a lower or micro-scale (i.e. in parts of urban districts/areas) (WP 5.4¹¹).

To evaluate the socio-economic-spatial impact of a Nature-Based Solution (NBS) in urban Healthy Corridors (HC), a generic Social Return on Investment (SROI) instrument has been developed (WP5.4). The Social Return on Investment (SROI) measures the social, environmental, and economic value created by a project. SROI considers both the financial returns generated by an investment and the social and ecological outcomes it produces.

The more traditional concept of Return on Investment (ROI) is a well-known concept within the discipline of economy to assess the (relative) profitability of an organization and/or its economic investments. The nature of the SROI is clearly metric as it involves the collection of quantitative data (i.e. ratio variables) on the basis of which one ratio or indicator is calculated. The Social Return on Investment (SROI) is the present value of the actual and future social impact relative to the investments made, based on both qualitative and quantitative information.

The different phases of the SROI tool are shown in the figure below (figure 1).

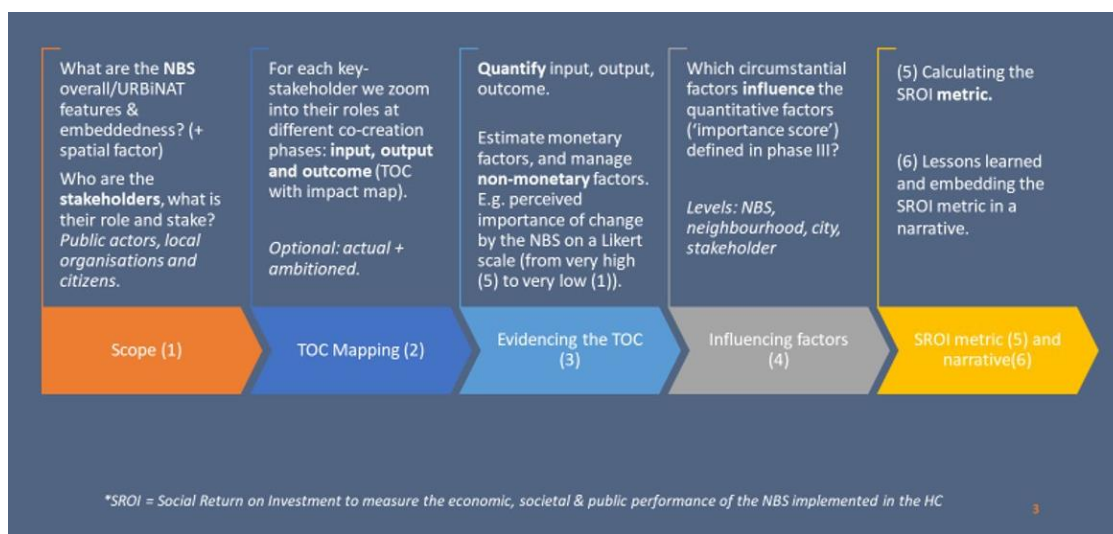


Fig 1: Phasing the implementation of the SROI instrument (based on WP5.4)

What are the different phases of the SROI instrument (figuur 1)? Firstly, Phase 1 describes the ‘scope’ and ‘major (key)stakeholders’. Secondly, in Phase 2, the researchers look at the roles of the different stakeholders in the different co-creation phases as a first screening. It is called mapping of ‘inputs’, ‘outputs’ and ‘outcome’, the mapping of the theory of change (TOC-mapping). In Phase 3, the researchers will evidence outcomes and give ‘values’ (at this phase they will paste a number). Other factors influencing the result of Phase 3 are being looked at in Phase 4. The SROI ratio is then calculated (Phase 5). Finally, what are the lessons learned (Phase 6)? From now on, the embedding and using of the SROI-ratio of metric is possible.

In the proposed research project, we will only focus on the first three phases of the SROI tool, partly due to the fact that the SROI tool is still under development.

2.3 How can we use the SROI tool for awareness around tree conservation?

Throughout Europe, people are working on Nature-Based Solutions, complex or not. For example, simply planting a tree or not cutting it down is already a quick-win and already has many advantages. We are thinking of the many ecosystem services provided by trees: for example, wood production, noise buffering, climate regulation, regulation of hydrological processes and filtering air quality. The paper 'Het verhaal van bomen (kappen) in Vlaanderen' [The story of (felling) trees in Flanders] examines why, despite the many policy initiatives to plant trees, so many trees and other greenery still disappear in Flanders - preserving the existing tree stock and greenery is at least as important as planting

¹⁰ www.URBiNAT.eu, retrieved on 27 July 2023.

¹¹ URBiNAT Project. WP5.4. Social & Economic Impact. The development of a generic SROI instrument to evaluate the socio-economic-spatial impact of a Nature-Based Solution (NBS) in urban Healthy Corridors (HC). (Unpublished – in development). (Expected in 2023)

new trees if we want a net growth of the number of trees (Vandevenne et al, 2023). To understand that, the authors of this aforementioned paper argue that deeper digging is needed. In their paper, starting from the figures on felling applications, the authors try to better understand the history and motives behind the felling of trees in Flanders (the so-called 'felling behaviour'), and to look for a number of causes and solutions through thinking in systems. It is first and foremost necessary to increase awareness, since there is apparently too little support for the preservation of trees. We think that with the SROI-tool (from URBiNAT) we can gain insight into possibilities for creating more support for the preservation of the existing tree stock and other greenery, starting with the first phases of SROI.

We could take a wider perspective and not only limit ourselves to trees, but involve different 'types' of greenery, such as low greenery (< 3 m), and high greenery (> 3 m) for example. Because there, too, there is a lack of sufficient support for its preservation. Spatial aspects are also important. In the first place, executing Phase 1 of the SROI tool, we will investigate who the various stakeholders are when trees are cut down. There are different categories of stakeholders involved in the system: citizens, several authorities, farmers, schools, etc.

In the second place, in a kind of stakeholder mapping, we can analyse their influence and their role in the different co-creation¹² phases (Phase 2 of SROI-tool). What is the input, output and outcome? For example, we can apply this to planting a tree in a garden.

Finally, in Phase 3 (of SROI-tool), the input, output and outcome of Phase 2 will be quantified by monetary and non-monetary factors. In this phase, we could for example use the Likert-scale as a survey aid¹³. What is the importance of change by the NBS on a Likert scale (if we preserve the greenery)? This scale is an answer scale, with which data that are difficult to express in numbers can be retrieved and measured. A likert scale is used, among other things, to investigate the opinions and behaviour of respondents. In other words, we will have to list all the benefits of trees and other greenery. And this from different angles.

2. CONCLUSION

Too many trees are being cut down in Flanders, despite the many policy initiatives to plant new ones. One of the conclusions drawn from the previous research on felling and planting trees and vegetation changes outside the forest (Peeters et al, 2022), is that there is too little support for the preservation of trees and that further research is needed.

In this paper, we propose to apply the URBiNAT's SROI method to gain insight into the possibilities for creating more support and awareness. This could then be worked out in a follow-up assignment of the research on felling and planting trees, which was mentioned above. In the paper we already put forward a suggestion on how to proceed with this. But a deeper investigation will show whether this method is possible and whether is the best choice. During this future research, we may find certain limitations and/or points for improvement in connection with the SROI method or we may find better and other possibilities to increase support. But before we come to any conclusions, we need to work on a final draft of this research proposal an implement this method.

3. REFERENCES

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¹² Co-creation is a form of collaboration in which all participants have an influence on the process

¹³ [Likert scale - Wikipedia](#), retrieved on 26 July.